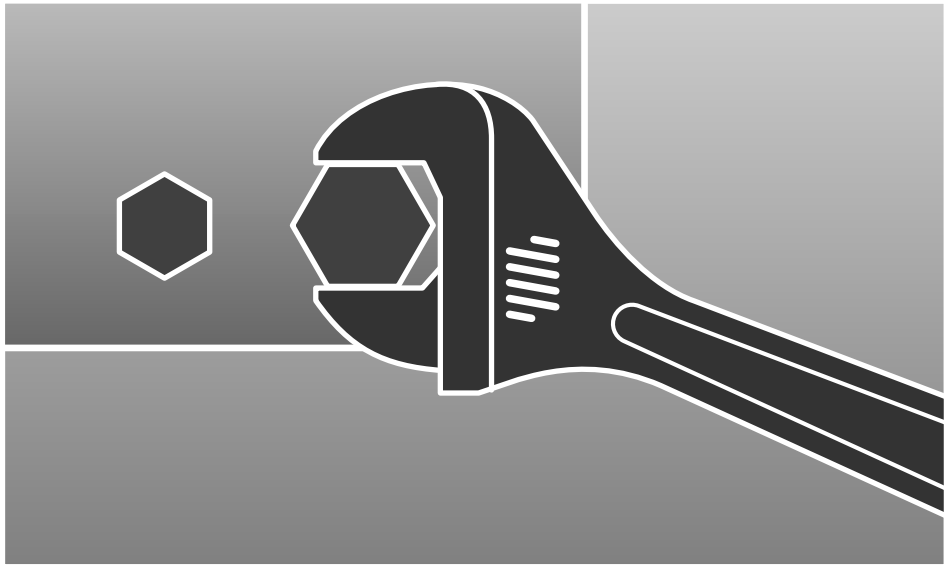
SAMSUNG

INSTALLATION MANUAL
MANUAL DE INSTALACIÓN
MANUEL D'INSTALLATION
MANUALE D'INSTALLZIONE
MANUAL DE INSTALAÇÃO
INSTALLATIONS-HANDBUCH
ΕΓΧΕΙΡΙΔΙΟ ΕΓΚΑΤΑΣΤΑΣΗΣ
ИНСТРУКЦИЯ ПО УСТАНОВКЕ

HH105ECM
HH140ECM
HH175ECM
HH175EZM

Duct-type Air Conditioner (Cool & Heat)
Aire acondicionador Tipo Canal (Enfriamiento & Calefacción)
Climatiseur de type Conduit (Refroidissement et Chauffage)
Ar Condicionado Tipo Conduto (Refrigeração e Aquecimento)
Climatiseur de type Conduit (Refroidissement et Chauffage)
Ventiltype Klimaanlage (Kühlen und Wärmen)
Κλιματιστικό Τύπου Αεραγωγού (Ψύξης και Θέρμανσης)
Воздушный Кондиционер Трубного Типа (Охлаждение и Обогрев)



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ENGLISH
ESPAÑOL
FRANÇAIS
ITALIANO
PORTUGUÊS
DEUTSCH
ΕΛΛΗΝΙΚΑ
RUSSIAN

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Chapter 1

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Preparation for installation

When deciding on the location of the air conditioner with the owner, the following restrictions must be taken into account.

General

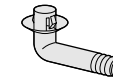
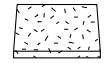
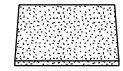
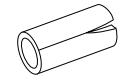
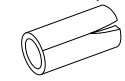
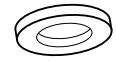
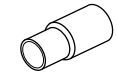
Do NOT install the air conditioner in a location where it will come into contact with the following elements:

- Combustible gases
- Saline air
- Machine oil
- Sulphide gas
- Special environmental conditions

If you must install the unit in such conditions, first consult your dealer.

Accessories

- The following accessories are supplied with the indoor unit.
  The type and quantity may differ depending on the specifications.

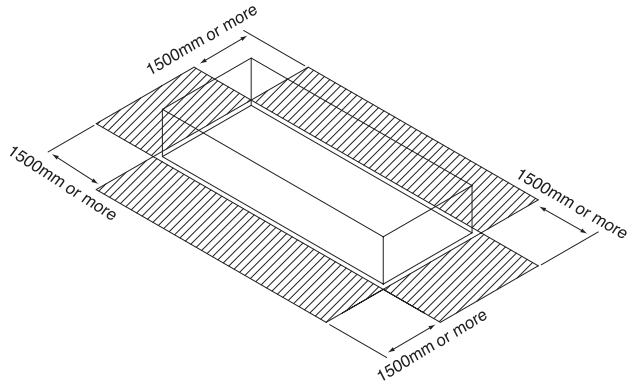
Owner's Instructions	Installation Manual	Pattern Sheet	Drain Plug 
Insulation Drain 	Insulation Cover Pipe 	Insulation pipe 	Insulation Drain Pipe 
Nut	Rubber 	Cable-Tie	Drain socket 

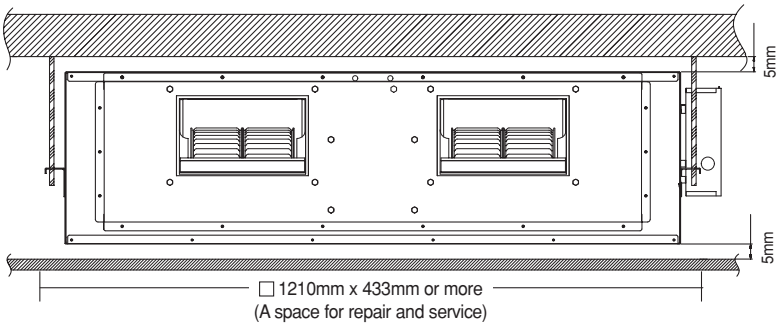
Deciding on where to install the indoor unit

Indoor Unit

- There must be no obstacles near the air inlet and outlet.
- Install the indoor unit on a ceiling that can support its weight.
- Maintain sufficient clearance around the indoor unit.
- Make sure that the water dripping from the drain hose runs away correctly and safely.
- The indoor unit must be installed in this way, that they are out of public access. (Not touchable by the users)
- After connecting a chamber, insulate the connection part between the indoor unit and the chamber with t10 or thicker insulation. Otherwise, there can be air leak or dew from the connection part.

Space Requirements for Indoor Unit



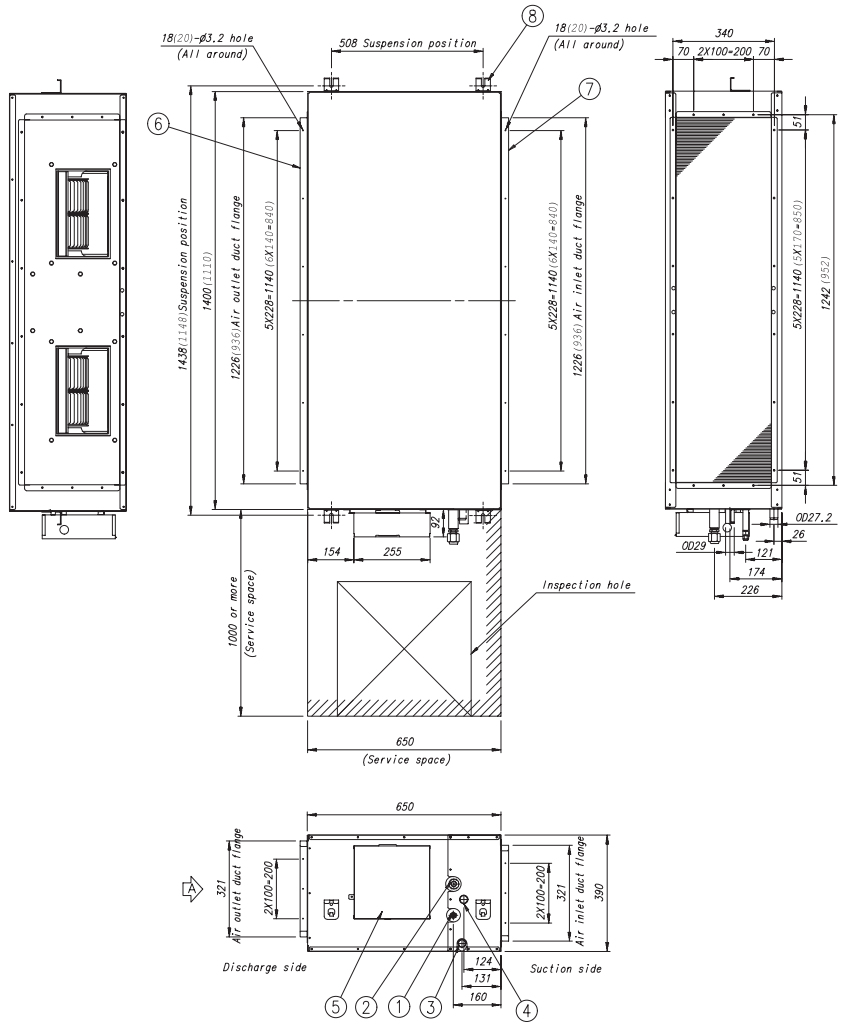


You must have 5mm or more space between the ceiling and the bottom of indoor unit.
Otherwise, the noise from the vibration of indoor unit may bother the user.
When the ceiling is under construction, the hole for check-up must be made to take service, clean and repair the unit.

Drawing of the indoor unit

- The inside of ( ) is for HH105/140ECM models.
- The outside of ( ) is for HH175ECM/EZM models.

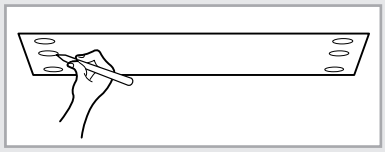
Unit : mm



No.	Name	Remark
1	Liquid pipe connection	ø9.52
2	Gas pipe connection	ø19.05
3	Drain pipe connection	
4	Drain pipe connection	
5	Power supply connection	
6	Air discharge flange	
7	Air suction flange	
8	Hook	For M8~M10

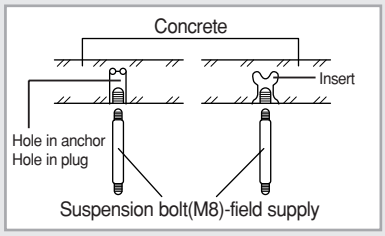
Indoor unit installation

1 Place the pattern sheet on the ceiling at the spot where you want to install the indoor unit.



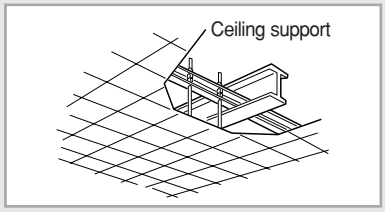
Note ◆ Since the diagram is made of paper, it may shrink or stretch slightly due to temperature or humidity. For this reason, before drilling the holes maintain the correct dimensions between the markings; refer to page 6.

2 Insert bolt anchors. Use existing ceiling supports or construct a suitable support as shown in figure.



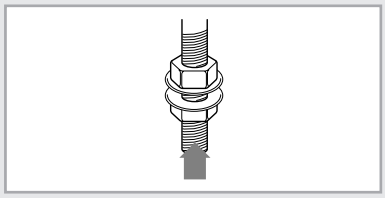
3 Install the suspension bolts depending on the ceiling type.

IMPORTANT **Ensure that the ceiling is strong enough to support the weight of the indoor unit.**
Before hanging the unit, test the strength of each attached suspension bolt.



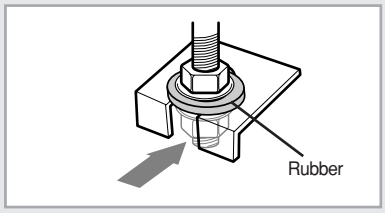
4 Screw eight nuts to the suspension bolts making space for hanging the indoor unit.

IMPORTANT **You must install the suspension bolts more than four when installing the indoor unit.**



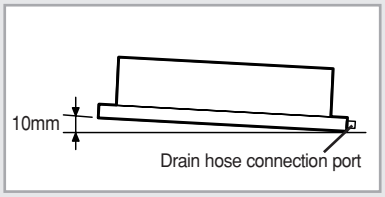
5 Hang the indoor unit to the suspension bolts between two nuts.

Note ◆ Tubing must be laid and connected inside the ceiling when suspending the unit. If the ceiling is already constructed, lay the tubing into position for connection to the unit before placing the unit inside the ceiling.



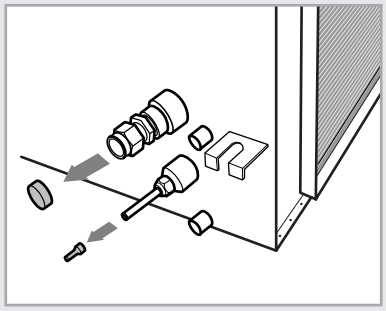
6 Screw the nuts to suspend the unit.

7 Adjust level of the unit by using measurement plate for all 4 sides.



Note ◆ For proper drainage of condensate, give a 10mm slant to the left or right side of the unit which will be connected with the drain hose, as shown in the figure. Make a tilt when you wish to install the drain pump, too.

Purging the unit



On delivery, the indoor unit is loaded with an inert nitrogen gas. All this gas must therefore be purged before connecting the assembly piping. To purge the inert gas, proceed as follows.

Unscrew the caps at the end of each pipe.

Result: All inert gas escapes from the indoor unit.

Note

- To prevent dirt or foreign objects from getting into the pipes during installation, do NOT remove the caps completely until you are ready to connect the piping.

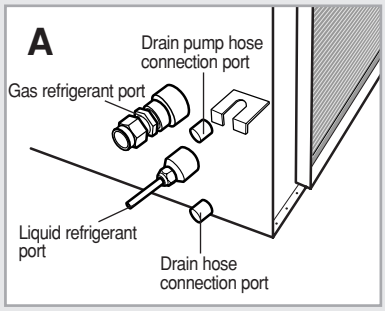
Connecting the indoor unit assembly piping

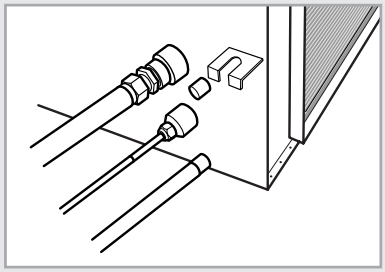
There are two refrigerant pipes of different diameters:

- A smaller one(9.52mm, 3/8") for the liquid refrigerant
- A larger one(19.05mm, 3/4") for the gas refrigerant
- The thickness of tube should not less than 1.0mm.
- The inside of copper tube must be clean & has no dust.

The connection procedure for the refrigerant pipes varies according to the exit position of the pipes from the indoor unit, as seen when facing the indoor in the "A" side.

- Liquid refrigerant port
- Gas refrigerant port
- Drain hose connection port
- Drain pump hose connection port





1 Remove the protection caps on the pipes and connect the assembly pipes to each pipe, tightening the nuts, first manually and then with a torque wrench, a spanner applying the following torque.

Outer Diameter	Torque (kgf•cm)
9.52 mm (3/8")	250~280
19.05 mm (3/4")	990~1210

Note ◆ If the pipes must be shortened refer to page 10.

2 Must use insulator which is thick enough to cover the refrigerant tube to protect the condensate water on the outside of pipe falling onto the floor and the efficiency of the unit will be better.

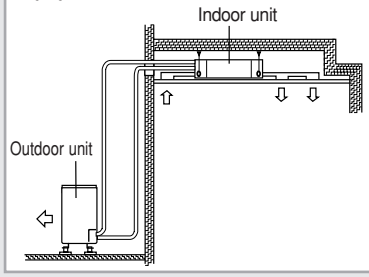
3 Cut off any excess foam insulation.

4 Be sure that there must be no crack or wave on the bended area.

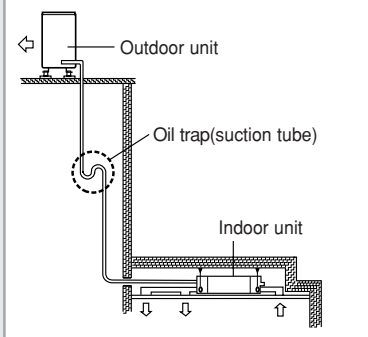
5 It would be necessary to double the insulation thickness (10mm or more) to prevent condensation even on the insulator when if the installed area is warm and humid.

6 Shape an oil trap as shown in figure the oil trap must be formed every level difference of 10m.

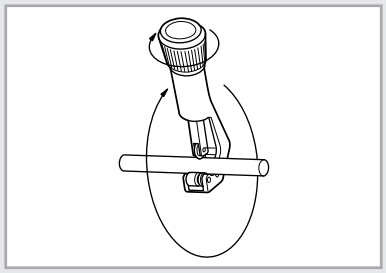
a. When the indoor unit is above the outdoor unit

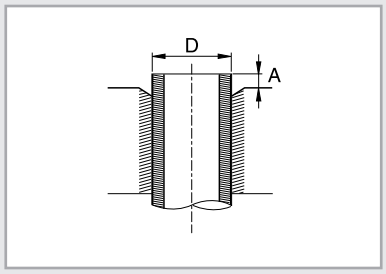


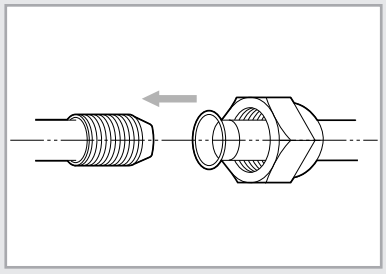
b. When the outdoor unit is above the indoor unit



Cutting/Flaring the pipes



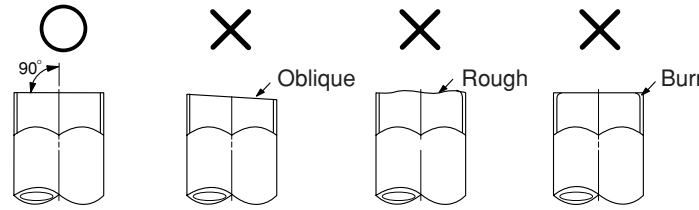




Connect the pipe within 50m and cutting pieces will not be gone into the pipe as being clean to pipe section.

1 Make sure that you have the required tools available (pipe cutter, reamer, flaring tool and pipe holder).

2 If you wish to shorten the pipes, cut it with a pipe cutter, taking care to ensure that the cut edge remains at a 90° angle with the side of the pipe. Refer to the illustrations below for examples of edges cut correctly and incorrectly.

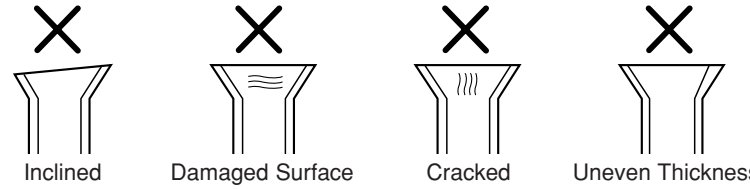


3 To prevent any gas from leaking out, remove all burrs at the cut edge of the pipe, using a reamer.

4 Slide a flare nut on to the pipe and modify the flare.

Outer Diameter (D)	Depth (A)
9.52 mm (3/8")	1.8 mm
19.05 mm (3/4")	2.2 mm

5 Check that the flaring is correct, referring to the illustrations below for examples of incorrect flaring.



6 Align the pipes and tighten the flare nuts first manually and then with a torque wrench, applying the following torque.

Outer Diameter	Torque (kgf•cm)
9.52 mm (3/8")	250~280
19.05 mm (3/4")	990~1210

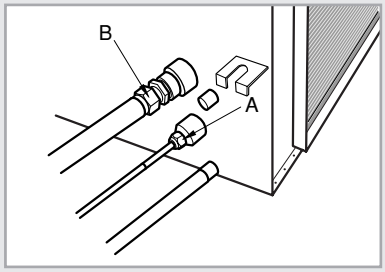
CAUTION

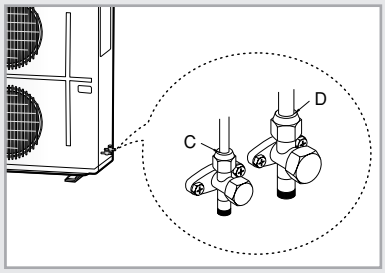
- ***In case of welding the pipe, you must weld with nitrogen gas blowing.***

Performing leak tests

Before completing the installation (insulation of the hose and piping), you must check that there are no gas leaks.

To check for gas leaks on the...	Then, using a leak detector, check the...
Indoor unit	Flare nuts at the end of sections A and B.
Outdoor unit	Valves on sections C and D.



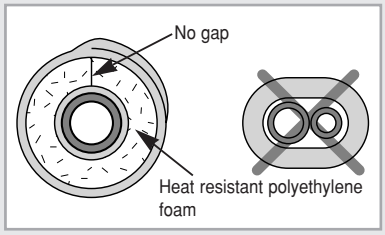


Insulation

Once you have checked that there are no leaks in the system, you can insulate the piping and hose.

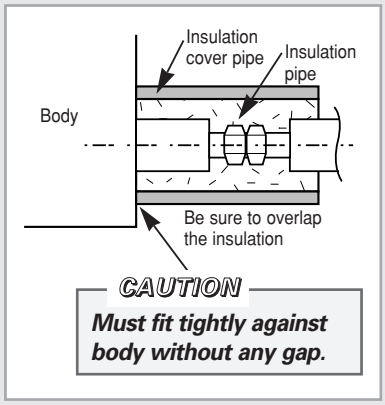
1 To avoid condensation problems, place **heat-resistant polyethylene foam** separately around each refrigerant pipe.

Note ◆ Always make the seam of pipes face upwards.

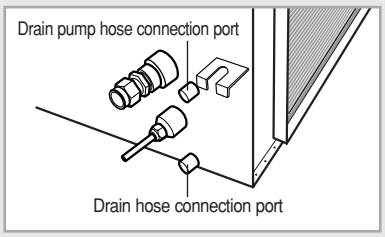


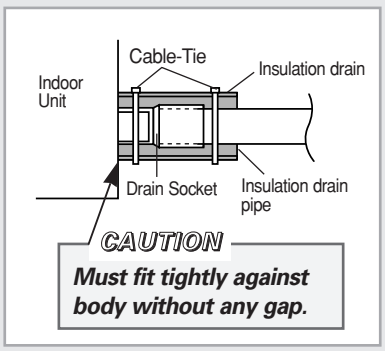
2 Wind insulating tape around the pipes.

3 Finish wrapping insulating tape around the rest of the pipes leading to the outdoor unit.



Drain hose installation





Care must be taken when installing the drain hose for the indoor unit to ensure that any condensate water is correctly drained outside.

1 Install the drain hose so that its length can be as short as possible. Internal diameter of the drain hose should be the same or slightly bigger than the external diameter.

Note

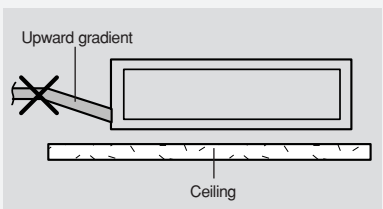
- Give a 10mm slant to the drain hose for proper drainage of condensate ; refer to page 7.
- Secure the drain hose with the cable-tie not to be separated from the unit.
- Never remove the rubber cap located on the drain pump hose connection port. The drain pump hose connection port is used only when installing an optional drain pump.

2 Wrap the drain hose with the insulation drain pipe, the insulation drain as shown in figure and secure them.

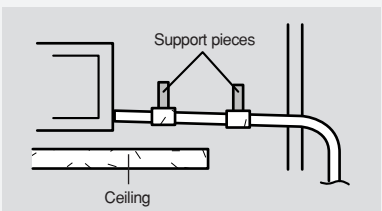
CAUTION

When not installing the drain pump

Do not give the hose upward gradient after the connection port.
This will cause water to flow backwards when the unit is stopped, resulting in water leaks.

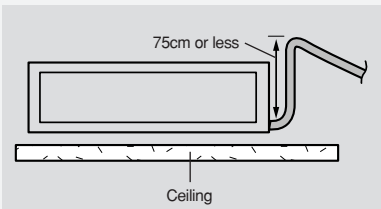


Do not apply force to the piping on the unit side when connecting the drain hose. The hose should not be allowed to hang loose from its connection to the unit. Fasten the hose to a wall, frame or other support as close to the unit as possible.



When installing the drain pump

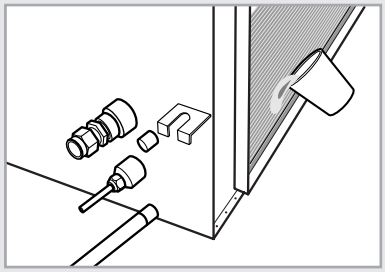
The maximum height of drain pump hose is 75cm or less. If it is raised higher than 75cm, there can be water leaks.



Testing the drainage

Prepare a little water about 5 liters.

1 Pour water into the base pan in the indoor unit as shown in figure.



2 Confirm that the water flows out through the drain hose.

Connecting the connection cord

The indoor unit is powered from the outdoor unit via the connection cord.

1 Remove the screw on the electrical component box and remove the cover plate.

2 Route the connection cord through the side of the indoor unit and connect the cable to terminals; refer to the figure below.

3 Route the other end of the cable to the outdoor unit through the ceiling & the hole on the wall.

4 Reassemble the electrical component box cover, carefully tightening the screw.

Between Indoor and Outdoor Connection Cord Specifications

Power Supply (Single Phase)			Earth Cable	Communication Cable	Home server
Power Supply	Max/Min(V)	Connection Wire			
220-240V~ /50Hz	±10%	2.0mm^2 (H07RN-F, 3G)	Ø 1.6mm (2 wires)	0.75~ 1.25mm^2 (H07RN-F, 2 wires)	0.75~ 1.25mm^2 (2 wires)

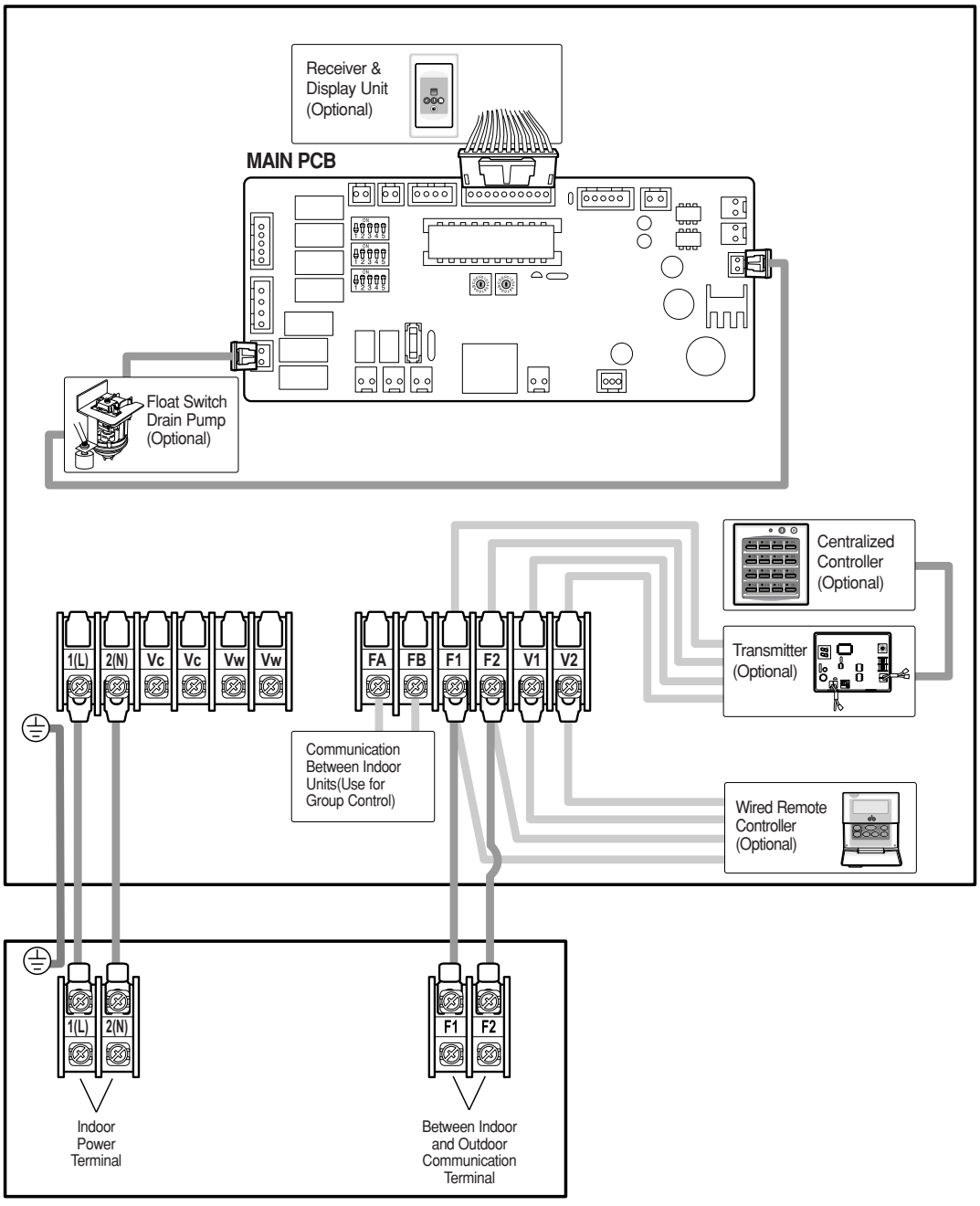
CAUTION

- ***Keep the power cable and the connection cord in a steel pipe to protect them against liquids, outside impacts and so on.***

Wiring and Communication Cable Connection

Connect the power cable, which is connected with the outdoor unit and supplied by another source, making sure that the power cable terminal should not be changed. Since the communication cable has the polarities, be careful to connect the terminal of F1, F2 and FA, FB rightly.

Indoor Unit



Outdoor Unit

Group control installation

Group Control

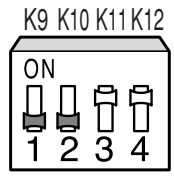
The group control can control 16 rooms(64 indoor units/standard) with a wired controller. When a whole unit is operating, each unit operates in the same mode(such as mode settings and the fan speed, etc.).

To control each unit separately, you can control it with the centralized controller or PC controller(S-Net) too. However, the group control and the separate control can' t be operated at the same time.

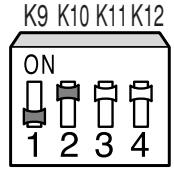
Group Control Installation

1 Connect the power cable (F1, F2 and FA, FB) between indoor units.

Master Indoor Unit



Slave Indoor Unit



2 Set the optional switch(SW05).

Note

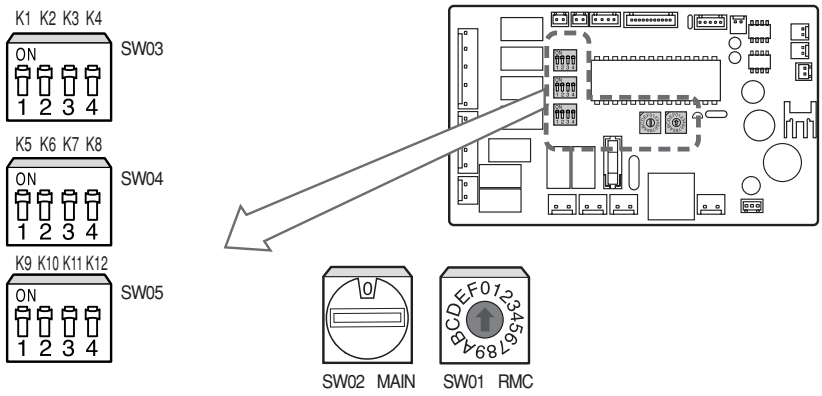
- ◆ Set the set you want to control as Master. (Set only a set of 16 rooms)
- ◆ Set the optional switch(K9) of the indoor unit to do a group control as OFF.
- ◆ Set the indoor unit as Master and then set its optional switch(K10) as OFF.

Indoor unit / Switch No.	Master Indoor unit	Slave Indoor Unit	Function
K9	OFF	OFF	Set during the group control
K10	OFF	ON	Set Master indoor unit during the group control

Assigning address to indoor unit

1 Before installing the indoor unit, assign an address to the indoor unit according to the air conditioning system plan.

2 The address of the indoor unit is assigned by adjusting MAIN(SW02) and RMC(SW01) rotary switches.



Assigning address to indoor unit (Cont.)

3 The MAIN address is for communication between the indoor unit and the outdoor unit. Therefore, you must set it to operate the air conditioner properly.

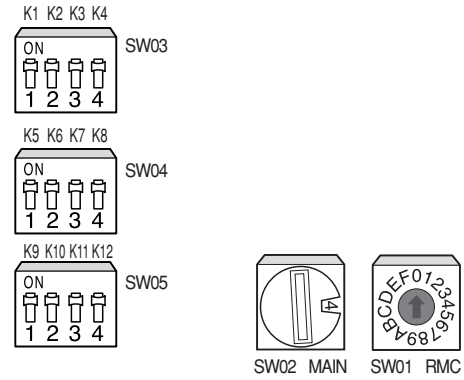
4 It is required to set the RMC address if you install the wired remote controller and/or the centralized controller.

5 If you install optional accessories such as the wired remote controller, centralized controller, etc. see an appropriate installation manual.

6 If an optional accessory is not installed, you do not have to set the RMC address. However, adjust K1 and K2 switches of the SW03 DIP switch to "ON" position in this case.

7 Set the MAIN address by adjusting the rotary switch(SW02) from 0 to F. Each indoor unit connected to the same outdoor unit must have different address.

i. e. If an indoor unit does not have an optional accessory and its MAIN address is "4"

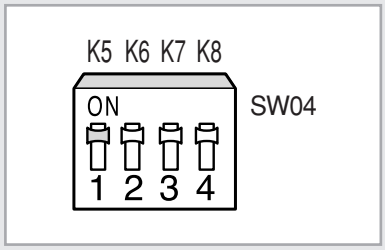


Additional functions

Compensation for lost temperature in heating operation

◆ Reduces the difference between an actual room temperature and a sensed temperature by the air conditioner when heating.

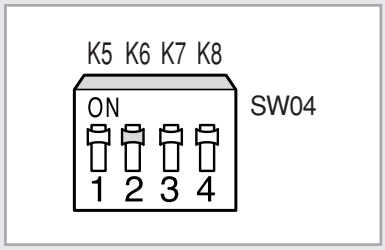
Switch No.	Switch ON	Switch OFF
K5	2°C compensation	5°C compensation



Adjusting filter cleaning cycle

◆ You can adjust the cycle for filter sign indicator.

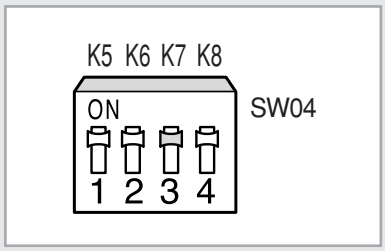
Switch No.	Switch ON	Switch OFF
K6	1000 hours	2000 hours



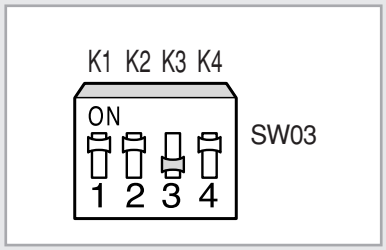
Hot water heater

◆ You must adjust the K7 when you install the hot water heater.

Switch No.	Switch ON	Switch OFF
K7	No use of hot water heater	Use of hot water heater



Increasing fan speed



If external static pressure is too great(due to long extension of ducts, for example), the air flow volume may drop too low at each air outlet.
This problem can be solved by increasing the fan speed using the following procedure.

Switch No.	Switch Position	Function
K3	ON	Normal speed
	OFF	High speed

Range of static pressure

Model	External static pressue(mmAq)		
	Min.	Normal	Max.
HH105ECM HH140ECM HH175ECM HH175EZM	8	14	20

How to Read Diagram

1 The vertical axis is the external static pressure(mmAq) while the horizontal axis represents the AIR FLOW(m^3/min).

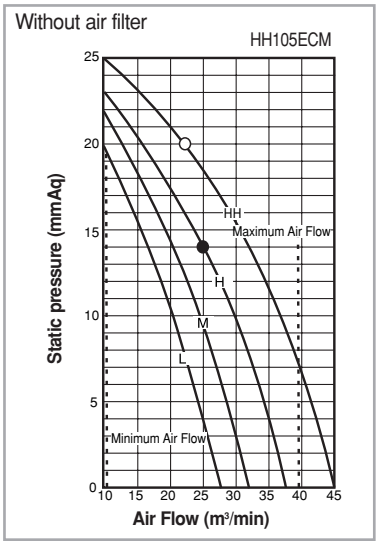
2 The characteristic curves for 'HH', 'H', 'Med', and 'Low' fan speed controller are shown.

3 The nameplate values are shown based on the 'H' air flow.

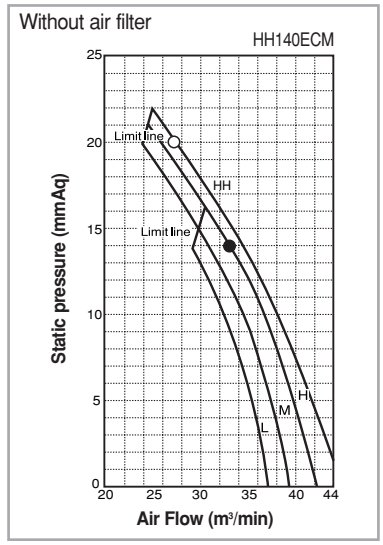
4 If external static pressure is too great, the air flow volume may drop too low as explained above.

Note ◆ HH : DIP Switch OFF position(High speed)
H : At shipment(Normal speed)

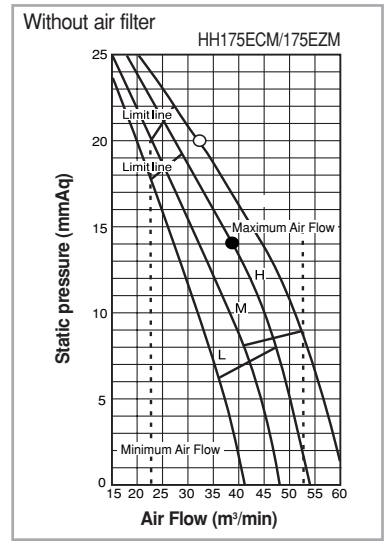
Without air filter



Without air filter

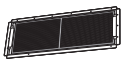


Without air filter

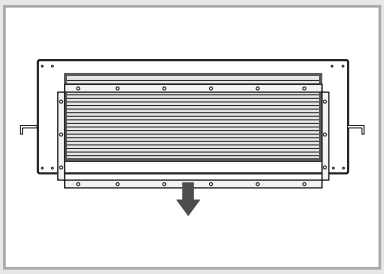


Air filter installation (Optional)

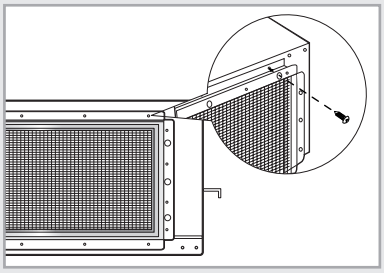
Accessories

Air Filter (1)	TH M4 X 12 Tapped Screw (18)
	

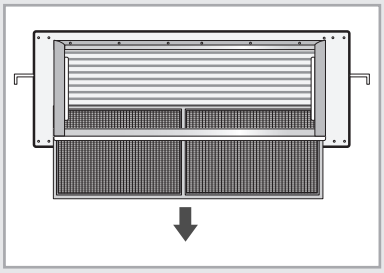
1 Remove the air inlet duct flange.



2 Attach the air filter kit to the air inlet side of indoor unit.



3 To clean the air filter, remove the fixing bracket on the base of air filter kit, then pull out the filter.

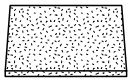
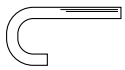


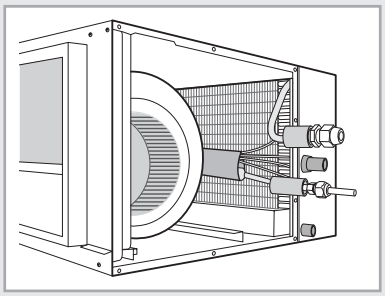
CAUTION

- ***The optional kits must be installed by an installation specialist.***
- ***Before installing the optional kits, ensure that you have turned off the main power.***
- ***The optional air filter has to be cleaned only by an authorized person or service agent.***

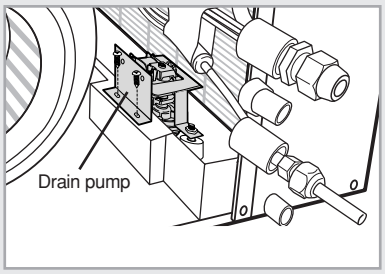
Drain pump installation (Optional)

Accessories

Drain Pump and Float Switch (1)	M4 X 12 Tapped Screw (4)	Cable-Tie (3)	Insulation Drain (2)	Drain Hose (1)
				

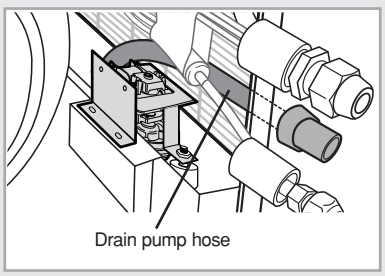


1 Open the side of indoor unit.



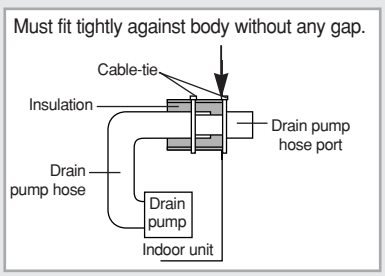
2 Screw the drain pump with two screws.

Note ◆ When installing the drain pump, leave a 7mm space between the bottom of the drain pan and the drain pump.



3 Connect the drain hose to the drain socket.

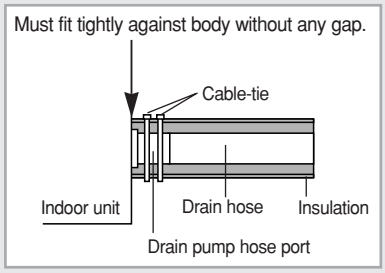
Note ◆ Wrap the drain tube outlet with an insulating materials.



4 Install the drain hose so that its length can be as short as possible. Internal diameter of the drain hose should be the same or slightly bigger than the external diameter of the drain port.

Note

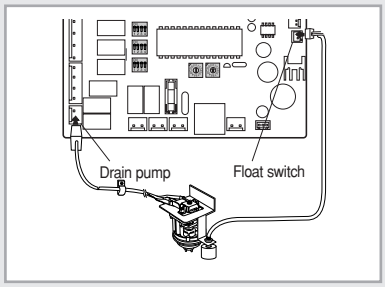
- ◆ Give a slant to the drain hose for proper drainage of condensate.
- ◆ Insulate the drain hose, then secure it with the cable-tie not to be separated from the unit.



5 Connect the cable to the electrical component box as shown at the figure.

Note

- ◆ Connect the drain pump cable to yellow terminal(CN74) and the float switch to black terminal(CN51).

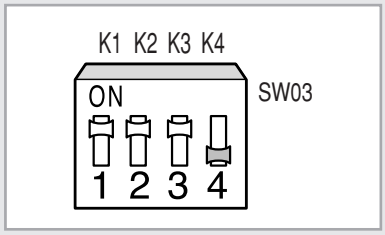


6 Adjust K4 DIP switch(SW03) to the "OFF" position.

Switch No.	Switch Position	Using Drain Pump
K4	ON	X
	OFF	O

Note

- ◆ Wrap the drain tube outlet on the right and left side of the indoor unit with an insulating materials.



CAUTION

- ◆ ***The optional kits must be installed by an installation specialist.***
- ◆ ***Before installing the optional kits, ensure that you have turned off the main power.***

Detection of errors

- If an error occurs during the operation, an LED flickers and the operation is stopped except the LED.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

LED Display on the receiver & display unit

LED Display

Abnormal conditions	Indicators					Operating
	Concealed Type (Blue)	Concealed Type (Red)				
	Standard Type					
Power reset	◑	X	X	X	X	
Error of temperature sensor in indoor unit (OPEN/SHORT)	X	X	◑	X	X	Displayed on appropriate indoor unit which is operating
Error of heat exchanger sensor in indoor unit(OPEN/SHORT)	◑	X	◑	X	X	Displayed on appropriate indoor unit which is operating
Error of outdoor temperature sensor Error of COND sensor Error of DISCHARGE sensor (OPEN/SHORT)	◑	X	X	◑	X	Displayed on appropriate indoor unit which is operating Displayed on outdoor unit
1. No communication for 2 minutes between indoor unit and outdoor unit (communication error for more than 2 minutes) 2. Indoor unit receiving the communication error from outdoor unit 3. Outdoor unit tracking 3 minute error 4. When sending the communication error from outdoor unit the mismatching of the communication numbers and installed numbers after completion of tracking. (communication error for more than 2 minutes)	X	X	◑	◑	X	1. Error of indoor unit: Displayed on the indoor unit regardless of operation 2. Error of outdoor unit: Displayed on the indoor unit which is operating

● On ◑ Flickering X Off

- If you turn off the air conditioner when the LED is flickering, the LED is also turned off.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

LED Display

Abnormal conditions	Indicators: Concealed Type (Blue)	Indicators: Concealed Type (Red)	Indicators: Standard Type	Indicators: Standard Type	Indicators: Standard Type	Operating
1. Communication error between indoors (Communication error for more than 2 minutes) 2. Slave of indoor unit tracking error	◑	X	X	X	◑	Error of indoor unit: Displayed on the indoor unit regardless of operation
1. 2nd detection of high temperature COND 2. 2nd detection of high temperature DISCHARGE 3. Error of reverse phase	X	X	◑	◑	◑	Displayed on appropriate indoor unit which is operating Displayed on outdoor unit
Error of float switch	X	X	X	◑	◑	
Error of setting option switches for optional accessories	X	X	◑	X	◑	
EEPROM error	◑	X	◑	◑	X	
EEPROM option error	◑	◑	◑	◑	◑	

● On ◑ Flickering X Off

- If you turn off the air conditioner when the LED is flickering, the LED is also turned off.
- If you re-operate the air conditioner, it operates normally at first, then detect an error again.

Wired remote controller

◆ If an error occurs, ▰ is displayed on the wired remote controller.
If you would like to see an error code, press the Test button.

Display	Explanation	Remark
Er↔EA	Error of communication between the outdoor unit and the wird remote controller	Communication errors
Er↔Eb	Error of communication between the indoor unit and the wired remote controller	
Er↔ox	Error of float switch	Displays related to indoor unit (x : 0~F)
Er↔qx	OPEN/SHORT error of room sensor in indoor unit	
Er↔rx	OPEN/SHORT error of eva in sensor in indoor unit	
Er↔tx	EEPROM error	
Er↔Ux	EEPROM option error	
Er↔vx	Error of fan starting	
Er↔Eo	Error of outdoor unit	For the details, refer to the installation manual of the outdoor unit.

The order of priority : EA → Eb → ox → qx → rx → tx → Ux → vx → Eo
- In case that the same error displays from multi-indoor units, the one having the faster address has the priority.

Chapter 2

OPTIONAL ACCESSORIES

■ Parts list 28

Receiver & Display Unit Accessories

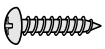
Concealed Type

◆ ***Receiver & display unit*** ◆ ***Wire kit***

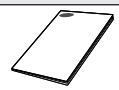
Receiver & display unit	STS 2S-2x10 tapped screw	2S-4x12 tapped screw	Owner's instructions	Installation manual	Wire kit (length 10m)
1	4	2	1	1	1

Standard Type

◆ ***Receiver & display unit*** ◆ ***Wire kit***

Receiver & display unit	M4x16 tapped screw	Cable-tie	Cable clamp	Owner's instructions	Installation manual	Wire kit (length 10m)
1	7	2	5	1	1	1
						

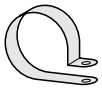
Wireless Remote Controller Accessories

Wireless remote controller	Battery	Remote control holder	STS 2S-2x10 tapped screw	Owner's instructions	Installation manual
1	2	1	2	1	1
					

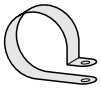
Wired Remote Controller Accessories

Wired remote controller	Cable-tie	Cable clamp	M4x16 tapped screw	Indoor unit power drawing cable	Owner's instructions	Installation manual
1	2	6	7	1	1	1

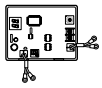
Centralized Controller Accessories

Centralized controller	Cable-tie	Cable clamp	M4x16 tapped screw	Owner's instructions	Installation manual
1	2	5	7	1	1
					

Function Controller Accessories

Function controller	Cable-tie	Cable clamp	M4x16 tapped screw	Owner's instructions	Installation manual
1	2	6	7	1	1
					

Transmitter Accessories

Transmitter	Transmitter power cable	Transmitter communication cable	Installation manual
1	1	1	1
			

Note ◆ If you would like to install the centralized controller, you must install the transmitter in the outdoor unit.

THIS AIR CONDITIONER IS MANUFACTURED BY:
ESTE AIRE ACONDICIONADO HA SIDO FABRICADO POR:
CE CLIMATISEUR EST FABRIQUE PAR:
QUESTO CONDIZIONATORE D'ARIA È PRODOTTO DA:
ESTE APARELHO DE AR CONDICIONADO É FABRICADO POR:
DIESE KLIMAANLAGE IST FABRIZIERT VON:
ΑΥΤΗ Η ΣΥΣΚΕΥΗ ΚΑΤΑΣΚΕΥΑΣΤΗΚΕ ΑΠΟ:
ЭТОТ КОНДИЦИОНЕР ИЗГОТОВЛЕН ФИРМОЙ:

SAMSUNG

ELECTRONICS